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10/750,090	12/31/2003	Hong Jiang	P18029	1885

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EXAMINER
ZHE, MENG YAO

ART UNIT	PAPER NUMBER
2195	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS,
WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 December 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date *4/6/05*.

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1.   Claims 1-34 are presented for examination.

Claim Rejections - 35 USC § 101

2.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3.   Claims 13-17 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

4.   Claims 13-17 are rejected under 35 U.S.C. 101 because the claimed invention recites an "apparatus"; however, it appears that the apparatus would reasonably be interpreted by one of ordinary skill in the art as software, per se, failing to be tangibly embodied or include any recited hardware as part of the system.

Claim Rejections - 35 USC § 112

5.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6.   Claims 1-34 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A.   The following claim languages are unclear and indefinite:

i)   Claim 18, line 6, it is uncertain what is meant by "a state of a variable corresponding to the semaphore" <i.e. what specific relationship does this state have with the semaphore? What are the states? Is it a field that is part of the semaphore?>

Line 7, it is unclear what is meant by "a semaphore entry for a thread" <i.e. what is a semaphore entry? Is there a queue, and does each element of the queue containing the thread ID correspond to an entry?>.

Lines 9-10, it is not clearly understood as to what is meant by "dispatch the thread...for execution" <i.e. when this is done, what state is the thread in? Is it actually executing at this point or has been dispatched but is still waiting on something?>.

Overall, it is uncertain what the intent of the claim is <i.e. are the threads trying to obtain ownership of the semaphore? And depending on if the semaphore has been acquired by other threads or not, the requesting threads may or may not own it?>.

Claims 1, 13, 28 have the same deficiencies as claim 18 above.

Claim Rejections - 35 USC § 102

7.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8.   Claims 1-2, 4-5, 7-8, 10-20, 23-29, 32-34 are rejected under 35 U.S.C. 102(e) as being anticipated by Kumar et al., Pub No. 2003/0167268 (hereafter Kumar).

9.   As per claim 1, Kumar teaches a method comprising:

determining a state of a variable corresponding to a semaphore (Para 33);

generating a semaphore entry for a thread of instructions prior to dispatch of the thread for execution if the variable is in a first state (Para 34);

dispatching the thread of instructions for execution prior to generating the semaphore entry for the thread if the variable is in a second state (Para 35: threads that are executing but is waiting on the lock corresponds to this limitation).

10.   As per claims 2, 13, 14, 18, 19, 28, 29, Kumar teaches dispatching the thread of instructions for execution and during the thread execution generating a semaphore entry for the thread if the variable is in a third state (Para 34: some threads may not need the lock at all and so is being executed at all times).

11.   As per claims 4, 15, 23, 32, Kumar teaches wherein generating the semaphore entry for the thread of instructions prior to dispatch of the thread of instructions if the

variable is in the first state comprises: transmitting a message to a semaphore entity to request control of the semaphore by the thread of instructions; and dispatching the thread of instructions to execution circuitry in response to receiving a signal indicating that the semaphore entity has processed the message (Para 34).

12.   As per claims 7, 16, 25, 33, Kumar teaches wherein dispatching the thread of instructions for execution prior to generating the semaphore entry for the thread if the variable is in a second state comprises: dispatching the thread of instructions to execution circuitry; and transmitting a message to a semaphore entity to request control of the semaphore by the thread of instructions in response to a signal indicating that execution of the thread of instructions has commenced (Para 35: if the thread was not executing, it wouldn't request the semaphore in the first place).

13.   As per claims 5, 8, 24, 26, 34, Kumar teaches wherein the dispatching of the thread of instructions and transmitting of the message to the semaphore entity are pipelined (Para 34, 35).

14.   As per claims 10, 17, Kumar teaches wherein dispatching the thread of instructions for execution and during the thread execution generating the semaphore entry for the thread if the variable is in a third state comprises: dispatching the thread of instructions to execution circuitry; and transmitting a message to a semaphore entity to request control of the semaphore by the thread of instructions in response to the execution of a set of instructions (Para 35).

15.   As per claim 11, Kumar teaches wherein the set of instructions comprises an

acquire semaphore instruction (Para 34).

16.   As per claim 12, Kumar teaches wherein the set of instructions comprises an

acquire semaphore with auto-release instruction (Para 34).

17.   As per claim 20, Kumar teaches wherein the semaphore entity maintains one or

more semaphores (Para 43).

18.   As per claim 27, Kumar teaches wherein the execution circuitry generates a

message to a semaphore entity to request control of the semaphore by the thread of

instructions in response to the execution of a set of instructions (Para 34).

Claim Rejections - 35 USC § 103

19.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

20.   Claims 3, 6, 9, 21-22, 30-31 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Kumar et al., Pub No. 2003/0167268 (hereafter Kumar).

21.   As per claims 3, 22, 31, Kumar does not specifically teach wherein the variable

corresponding to the semaphore indicates whether a semaphore entity is to

automatically transmit a message indicating control of the semaphore to execution circuitry corresponding to the thread of instructions.

However since indication of whether to send messages automatically are commonly practiced in the field of communication among threads, it would have been obvious to one having ordinary skill in the art to have a variable indicator for the purpose of indicating whether a message is to be automatically passed or not.

22.   As per claims 6, 9, 21, 30, Kumar does not specifically teach wherein the message comprises a semaphore identifier field, a thread identifier field, and a field corresponding to the variable.

However, it would have been obvious to one having ordinary skill in the art to have the message be comprised of elements above since in order for a thread to establish communication with a semaphore and in the end obtain ownership of the semaphore, the thread ID, semaphore ID and the variable status must all be known and manipulated with. Moreover, such specific steps are commonly practiced in the art of semaphore processing.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MENGYAO ZHE whose telephone number is (571)272-6946. The examiner can normally be reached on Monday Through Friday, 7:30 - 5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on 571-272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Meng-Ai An/
Supervisory Patent Examiner, Art Unit 2195